

Claims

1. A system to reduce the transmission of structure-borne noise of a convective cooling system for electronic components housed in a chassis comprising:
 - an isolation plate, said isolation plate comprising a frame with one or more holes bored therein;
 - a rear plate, said rear plate having one or more holes bored therein;
 - a fan to convectively cool said electronic components, said fan having holes bored therein; and
 - one or more isolators, said isolators comprising a base, a shaft, and a cone-shaped stopper;
 - wherein said isolators are positioned in said holes of said isolation plate, said holes of said rear plate, and said holes of said fan, such that said isolators connect said isolation plate, said rear plate, and said fan together;
 - and further wherein said isolators prevent said transmission of structure-borne noise.
2. The system to reduce structure-borne noise of a convective cooling system for electronic components according to claim 1, wherein said rear plate comprises recessed shoulders forming a pocket, said pocket receiving and mating with said isolation plate.
3. The system to reduce structure-borne noise of a convective cooling system for electronic components according to claim 2, wherein said isolation plate sets into said

rear plate such that no short circuit path exists for air traveling from said fan, through said isolation plate, and into said rear plate.

4 The system to reduce structure-borne noise of a convective cooling system for electronic components according to claim 1, wherein said isolators further comprise a grooved shaft attached to said cone-shaped stopper.

5. The system to reduce structure-borne noise of a convective cooling system for electronic components according to claim 1, wherein said isolators comprise an elastomeric material.

6. The system to reduce structure-borne noise of a convective cooling system for electronic components according to claim 5, wherein said elastomeric material is a silicone-rubber composition.

7. The system to reduce structure-borne noise of a convective cooling system for electronic components according to claim 6, wherein said isolators comprise model number F-344 of the EAR Specialty Composite Corporation of Indianapolis, Indiana.

8. The system to reduce structure-borne noise of a convective cooling system for electronic components according to claim 1, wherein said isolation plate comprises aluminum or stainless steel.

9. An apparatus for isolating structure-borne noise of a cooling system for electronic components in a structurally integrated enclosure comprising:

an isolation plate, said isolation plate comprising a frame with one or more holes bored therein;

a rear plate attached to said structurally integrated enclosure, said rear plate comprising a pocket for reception and mating of said isolation plate;

a fan to convectively cool said electronic components, said fan having holes bored therein; and

one or more isolators, said isolators comprising a base, a shaft, and a post-style stopper;

wherein said one or more isolators connect said isolation plate to said rear plate;

and further wherein said one or more isolators dampen the transmission of said structure-borne noise.

10. The apparatus for isolating structure-borne noise according to claim 9, wherein said one or more isolators connect said isolation plate to said fan.

11. The apparatus for isolating structure-borne noise according to claim 9, wherein said pocket of said rear plate is formed by recessed shoulders, and further wherein said pocket receives and mates with said isolation plate.

12. The apparatus for isolating structure-borne noise according to claim 9, wherein said isolation plate sets into said rear plate such that no short circuit path exists for air traveling from said fan, through said isolation plate, and into said rear plate.
13. The apparatus for isolating structure-borne noise according to claim 9, wherein said isolators further comprise a grooved shaft attached to said cone-shaped stopper.
14. The apparatus for isolating structure-borne noise according to claim 9, wherein said isolators comprise an elastomeric material.
15. The apparatus for isolating structure-borne noise according to claim 14, wherein said elastomeric material is a silicone-rubber composition.
16. The apparatus for isolating structure-borne noise according to claim 9, wherein said isolators comprise model number F-344 of the EAR Specialty Composite Corporation of Indianapolis, Indiana.
17. The apparatus for isolating structure-borne noise according to claim 9, wherein said isolation plate comprises aluminum or stainless steel.
18. The apparatus for isolating structure-borne noise according to claim 9, wherein said isolators comprise sandwich type isolators.

19. The apparatus for isolating structure-borne noise according to claim 18, wherein said sandwich type isolators comprise model number MF-100-UC04-H of the EAR Specialty Composite Corporation of Indianapolis, Indiana.

20. A system to dampen the transmission of structure-borne noise comprising:
an isolation plate, said isolation plate comprising a machined frame with holes bored therein;
a first component of said system comprising holes bored therein, said first component generating structure-borne noise;
a second component of said system comprising holes bored therein;
one or more isolators, said isolators comprising a base, a shaft, and a cone-shaped stopper;
wherein said isolators are positioned in said holes of said isolation plate, said holes of said first component, and said holes of said second component;
and further wherein said isolators dampen the transmission of said structure-borne noise from said first component to said second component.

21. An apparatus for isolating structure-borne noise of a cooling system for electronic components in a structurally integrated enclosure comprising:
an isolation plate, said isolation plate comprising a frame with one or more holes bored therein;
a rear plate attached to said structurally integrated enclosure, said rear plate comprising a pocket for reception and mating of said isolation plate;

a fan to convectively cool said electronic components, said fan having holes bored therein; and

one or more isolators, said isolators comprising a base, a shaft, and a post-style stopper;

wherein said one or more isolators connect said isolation plate to said fan;

and further wherein said one or more isolators dampen the transmission of said structure-borne noise.